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PHONOLOGICAL COMPETENCE IN ENGLISH-SPANISH BILINGUAL CHILDREN WITHIN A SPANISH-SPEAKING ENVIRONMENT: A CASE STUDY

TRABAJO FIN DE GRADO

GRADO EN ESTUDIOS INGLESES

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ABSTRACT

The idea for this dissertation emerged from the controversial question: what makes someone bilingual? For the sake of delimiting such a broad topic, the aim of this paper is to analyse the phonological proficiency performed by bilingual individuals. This case study pays special attention to the way bilingual children deal with the articulation of different phonemes when speaking English and Spanish. Moreover, the previously selected bilinguals shared the same Spanish-speaking environment – key to determine the target phonemes in both languages. Due to extensional reasons, the range of phonemes in both languages was delimited to a selection of distinctive sounds from English and Spanish. Based upon psycholinguistic, sociological and phonological foundations, the analysis attempted to draw conclusions on cross-linguistic phenomena – e.g. "phonemic transfer" and "avoidance"— in bilingual individuals from an early acquisition stage (i.e. 5 years old) to a more settled one (i.e. 9 years old).

Key words: Bilingualism, Sociolinguistics, Psycholinguistics, Contrastive Linguistics, Phonology, Transfer.

RESUMEN

La idea para esta disertación surgió de la polémica pregunta: ¿qué hace a alguien bilingüe? Por razones de acotación de tal amplio tema, el objetivo de este trabajo es analizar la competencia fonológica en individuos bilingües. Este caso estudio presta especial atención a la manera en la que los niños conllevan la articulación de distintos fonemas a la hora de hablar inglés y español. Además, los bilingües seleccionados compartían el mismo entorno hispanohablante (clave para determinar los fonemas específicos en ambos idiomas). Debido a razones extensionales, el rango de fonemas en ambas lenguas fue delimitado a una selección de sonidos distintivos del inglés y el castellano. Apoyándose en teorías psicolingüísticas, sociológicas y fonológicas, el análisis trató de sacar conclusiones acerca de fenómenos inter-lingüísticos (ej. "transferencia fonémica" o "elusión") en individuos bilingües desde una etapa de adquisición temprana (5 años) a una más asentada (9 años).

Palabras clave: Bilingüismo, Sociolingüística, Psicolingüística, Lingüística Contrastiva, Fonología, Transferencia

1. INTRODUCTION

Given the present-day multilingual environment, bilingualism is an attractive topic for both linguists, psychologists and sociologists. It has prominently been influenced by the multiple media types (e.g. social media, online newspapers, language-learning applications, etc.) and the relevance of languages in labour. Yet, the question that raises is what being bilingual truly means; from multidisciplinary perspectives, several scholars (Bloomfield 1933, Chin 2007, Crystal 2008) have been tackling such linguistic phenomenon since the early 20th century. It could be said that bilingualism is so abstract that its definition is still a topic of discussion. Consequently, multiple factors must be considered to reach a commonly-agreed denotation (Chin and Wigglesworth, 2007: 3).

This controversial definition becomes key, since an acceptable formalisation of bilingualism should be adopted to carry out the main topic on phonological acquisition in two different native languages. For instance, Chin and Wigglesworth (2007: 6-8) argue that bilingualism should be defined by considering multiple factors which will determine up to four sorts of bilingualism, namely: balanced, dominant or compound, recessive and limited (cf. Section 2.1). This classification is to be considered, for this dissertation will study, as mentioned, the phonological acquisition in a group of balanced bilinguals — that is, those bilingual speakers capable of communicating in a parallel way in, at least, two languages regardless of the sociological context (Lambert et al., 1959: 77). Even though the existence of such type of bilingualism is questioned by many scholars, this study aims to compare the phonological acquisition in bilinguals who, somehow, use both languages in a similar way and with the same frequency.

Regarding age of phonological acquisition (cf. Section 2.2), Genesee (in Paradis, 2001: 19) proposes a Unitary Language System (ULS) hypothesis whereby bilinguals become conscious of the different codes they are dealing with. The scholar concludes that the tentative age span in which these individuals consciously get to know this phonological segregation is that between 2 and 3 years. Every participant chosen had overcome this ULS stage, so they were aware of their use of two phonological systems.

Hence, by considering age, sociolinguistic environment and the different types of bilingualism, this paper intends to answer the following research questions:

1. Do bilingual individuals share a balanced production of both Spanish and English phonemes?

2. Given the Spanish-speaking environment, to what extent (if any) does Spanish become dominant in the articulation of English phonemes?

In brief, the hypothesis this dissertation is based upon aims at reflecting the Spanish sociolinguistic environment as the likely trigger for, in this case, phonemic cross-linguistic transfer; in other words, the Spanish-speaking environment is considered to be one of the main factors whereby the English phonemes may get affected.

2. LITERATURE REVIEW

2.1. Defining bilingualism

As explained in the introduction, bilingualism has been a remarkably difficult term to define given the wide variety of bilinguals all around the world. This explains why different scholars have provided their own definitions regarding their own perspective on bilingualism (Sánchez-Casas, 1999; Michael et al., 2005; Crystal, 2008). It could be said that the most common and earliest definition of bilingualism was given by Bloomfield (quoted in Chin et al., 2007: 5) as "native-like control of two languages". Moreover, Crystal defines 'bilingualism' in his *Dictionary of Linguistics and Phonetics* as follows:

> The general sense of this term – a person who can speak two languages – provides a pre-theoretical frame of reference for linguistic study, especially by sociolinguists, and by applied linguists involved in foreign- or second-language teaching; it contrasts with monolingual. (Crystal, 2008:53).

Nonetheless, this denotation has repeatedly been challenged by several experts. Some of these studies were based on the different types of bilingualism and their respective definitions: balanced bilingualism (Lambert et al., 1959: 77; Vega et al., 2010: 158), that basically refers to the complete control of two different languages regardless of environmental factors; limited bilingualism or semilingualism appeals to those "having only partial knowledge or partial understanding of the language, or of the two languages" (Hinnenkamp, 2005: 62); dominant (cf. section 3) (Clyne, 1991: 89); passive bilingualism, that conceives "bilinguals who are gradually losing competence in one language, usually because of disuse" (Chin et al., 2007: 7).

2.2. Studies on phonological acquisition in bilinguals

At the very early stages of language acquisition, phonology becomes vital. Paternal dialogues, motherese, or simple conversations of people around notably influence both our reception of phonemes and their eventual articulation. In case the child is raised in a monolingual environment, his or her phonological system would be basically made up by a unique language (e.g. Spanish). In contrast, if a child is nurtured in a bilingual environment, the phonological acquisition may be exclusively distinguished if the two target languages (e.g. Spanish and English) differ in prosodic terms (Sebastián-Galles and Bosch, 2005).

In order to carry out this analysis, it must be born in mind that both phonological systems (i.e. Spanish and English) must be contrasted. Previous studies (Lust, 2006) provide remarkable theories on phonological acquisition by means of code-cracking (i.e. "discovering the essential units of the sounds of a language and their system and combination" (Lust, 2006: 143)). Relevant scholars have fully researched about this phenomenon right since birth – essential life-stage in which prosody ensues as requisite in humankind's phonological development (Chomsky et al., 1968; Crystal, 1970: 78;).

Linguistic transfer turns out to be one of the most crucial points in this paper, given that it is a bilingual environment what is being tested. Experts (Durgunoglu et al., 1993; Lleó et al., 2016) have provided thorough research on phonological phenomena among bilingual individuals such as transfer (i.e. the replacement of a specific code's aspect of one language — e.g. phonology — by another's.). Besides, Lleó includes in her research plenty of cross-linguistic interaction forms, namely transfer[1], acceleration[2] or delay[3] (2016: 13).

2.3. Context and code-switching

When researching on bilingualism, not only linguistic factors should be considered, but also the context the speakers are raised in (i.e. nurture). In other words, one particular

[1] Also known as "interference": "a term used in sociolinguistics and foreign-language learning to refer to errors a speaker introduces into one language as a result of contact with another language" (Crystal, 2008: 249)

[2] Hypothesis based upon the supposition that "interaction between the two languages of bilingual children aids in the acquisition process and thus results in superior linguistic skills in bilinguals compared with monolinguals" (Fabiano-Smith et al, 2010: 162)

[3] "Delayed release sounds are defined both articulatorily and acoustically, as those sounds where a sound is produced with a gradual release sufficient to make a sound similar to a fricative, as in affricates." (Crystal, 2008: 134)

linguistic context will determine the development of a specific type of bilingualism. Researchers have evidenced a key distinction between primary and secondary contexts (Chin and Wigglesworth, 2007). According to Chin and Wigglesworth (2007:10), children raised in a primary context acquire both languages in a naturalistic way (i.e. not structurally); on the other hand, secondary contexts involve infants who have linguistically been immersed in an L2 (e.g. a Spanish child enrolled in an English-Spanish bilingual school).

In the case of this paper, the context which involves the two target languages is clearly unlike. English-Spanish bilingualism, in this case, is practically affected by the Spanish cultural context, so code-switching will also be highly useful to be studied. Several scholars (Michael et al., 2005; Wardhaugh, 2010; Fabiano-Smith et al, 2010) argue that L2 codes (i.e. English) will easily be replaced, or at least affected, by L1's due to the its constant activation. In a way, this will help at a phonological stage, for English would be used in a secondary background (typically at home), whilst Spanish phonology is likely to be dominant.

3. THEORETICAL BACKGROUND

Since bilingualism is subdivided in several types — e.g. balanced, coordinate, compound, etc.— this paper has focused on two specific kinds (balanced and coordinate), for they fit both the research purpose and the subject's bilingual features. Therefore, apart from the previously provided general definition (cf. Crystal, 2008: 53), the concept of balanced bilingualism will be furtherly developed. According to Alarcón (2003), balanced bilingualism conceives the ability of native-like control in both languages at the same degree of proficiency. In other words, the subjects of this research are meant to be capable of producing the same phonemes in both languages (i.e. English and Spanish); yet, the possibility of suffering from phonemic transfer from one language into another is still present.

The second type of bilingualism to be defined is the so-called coordinate bilingualism. Diller (1970: 254) proposes that co-ordinate bilinguals learn each of their target languages (e.g. English and Spanish) in distinct environments, as the production of each language is triggered by specific situations, places, people, etc. Typically, coordinate bilingualism has been defined and contrasted to compound bilingualism. Apparently, both kinds of bilingualism resemble a considerable competence in, at least, two languages. Nevertheless, compound bilinguals are argued to depend on a dominant

language, normally, due to overuse. Scholars (cf. Diller, 1970; Sugunasiri, 1971) state that the main difference between the two is based on a matter of association; that is to say, coordinate bilinguals can differentiate between one language or another depending on the context; on the other hand, compound bilinguals lack the filter that would trigger the use of each code (Sugunasiri, 1971: 106).

Provided that an individual shows bilingual competence, there is usually code-switching implied. Thus, the contact of both languages leads to a series of neurological processes through the so-called left-caudate. This area of the brain, which is placed on the left hemisphere — great part of the language control is concentrated in this part —, functions as a tool for code-switching, especially in bilingual speakers. Studies (e.g. Wong et al., 2016: 4) have found that the activation of the left-caudate cells is considerably stronger in bilinguals than in monolinguals. Hence, this area of the brain must be crucial in phonemic switching, too. Individuals are supposed to undergo neurological processes that make them aware of the phonological system they ought to perform when selecting different languages.

In broad terms, code-switching is typically embodied in the bilingual phenomenon whereby speakers of two or more languages produce utterances in both languages independently from the interlocutor or topic (Poplack, 2001: 2062). Thus, balanced bilinguals may experience language transfers in plenty of forms (e.g. syntactically, phonologically or morphologically). In other words, code-switching could imply that when using language in a Spanish context discourse, the bilingual speaker may change to lexis, syntactic structures or phonemes from their $L1_2$.

Along with code-switching, bilingualism studies pay special attention to cross-linguistic phenomena, of which this dissertation focuses on phonemic transfer. Considering Chomsky's Generative Grammar (1968) and Jakobson's universal rules on phonemic acquisition (1968), thorough research on phonological acquisition has emerged both in monolinguals (Gómez Fernandez, 1993) and bilinguals (Fabiano-Smith et al, 2010; Lleó, 2016). The mentioned scholars coincide, at least, in that phonemic patterns are far from scaling in a specific order of acquisition due to sociolinguistic factors — i.e. language usage.

4. METHODOLOGY

This section is intended to present the materials, variables, and factors that have been considered crucial for the conduction of the experiment. As mentioned in sections 1 and

2, the purpose of this paper was to test the phonological acquisition and competence in English-Spanish bilinguals living in Spain; particularly, aspects regarding phonation, sociolinguistic factors and neurolinguistic research on cross-linguistic phenomena (e.g. phonemic transfer). Therefore, the methodology has been subdivided into two sections considering the participants' sociological and linguistic conditions (4.1) and the development of the experiment itself (4.2).

4.1. Participants and variables

For specific reasons, two families which resembled similar cultural and sociological circumstances were taken as targets for the experiment. Each family presented a bilingual atmosphere where children were bred in: the first family (F1) was composed of an Irish father and a Spanish mother with two daughters and one son; and the second family (F2) presented a Scottish father and a Spanish mother with one daughter and one son. In both cases, the age span did not vary from 5 to 10 years old, so none of the participants had already overcome the so-called telegraphic stage[4]. In other words, their utterances are closely similar to those of adult speakers (Fromkin et al, 2007: 413). Hence, they all were meant to articulate a wide range of phonemes in both languages, albeit they still struggled because of age conditions and cross-linguistic interactions (furtherly explained in 5.1 and 5.2). It must be considered that none of the participants suffered from any language disorder that may affect their articulatory phonetics such as, for instance, dyslalia[5];

Table 1. Considered data on bilingual subjects

		S1	***S2***	***S3***	***S4***	***S5***
1	**Age**	6	5	10	7	5
2	**Gender**	F	M	F	F	M
3	**English variety**	Irish	Irish	Irish	Scottish	Scottish
4	**Spanish variety**	SPS*	SPS	SPS	SPS	SPS
5	**Schooled**	+	+	+	+	+
6	**EFL at school (if 5 is +)**	+	+	+	+	+

[4] *telegraphic stage* refers to that period (20-30 months old) in which infants start performing two- and three-word utterances that tenderly lack of function words and inflectional endings: e.g. "mommy go" (Lust, 2006: 291; Crystal, 2008: 478).

[5] According to the Merriam-Webster Medical Dictionary, *dyslalia* can be defined as "a speech defect caused by malformation of or imperfect distribution of nerves to the organs of articulation (as the tongue)" https://www.merriam-webster.com/medical/dyslalia

7	**English in the media (TV)**	+	+	+	+	+

**SPS: Standard Peninsular Spanish; EFL: English as a Foreign Language; S: Subject*

Apart from the age span, other variables such as their parents' variety of both English and Spanish played a determining role (provided that certain phonemes are pronounced differently depending on the language). For instance, the Spanish voiced, palatal nasal [ɲ] was rather expected to be found in the Spanish members than in the English-speaking ones. Nevertheless, the target phonemes in both languages were meant to be neutral. That is, no local phonemes like the Scottish alveolar thrill [r] were tested. Due to the wider range of Standard English phonemes (ca. 44) over the Standard Peninsular Spanish (SPS henceforth) ones (ca. 22). Table 2 shows the specific phonemes that were selected in both languages for the children to perform; in all the cases, there was a specific word that upholds the target phonemes, so that the children could recognise them more easily:

Table 2. Spanish and English phonemes used for the experiment along with their correspondent words.

Standard English Phonemes	
Phoneme	**Word**
/æ/	Cat /k**æ**t/
/d/ /ə/	Doctor /ˈ**d**ɒktə/
/ɜ:/	Bird /bɜ:d/
/t/	Toy /**t**ɔɪ/
/v/	Victory /ˈ**v**ɪktəri/
/r/	Rose /**r**əʊz/
/ə/	Television /ˈtɛlɪˌvɪʒən/
Standard Peninsular Spanish Phonemes	
Phoneme	**Word**
/ř/	Rosa /'**ř**o sa/
/t/	Foto /'fo **t**o/
/d/	Hada /ˈa**d**a/
/b/	Victoria /**b**ik 'to rja/
/e/	Abeja /a'b**e** xa/

4.2. Experiment and materials

The procedure to test the phonological acquisition and competence was listen-and-repeat based. To put it differently, provided that most of the subjects already knew how to read (at least in Spanish, since they were recently introduced into EFL lessons in school as illustrated in Table 1), they were asked to carefully read a set of twelve flashcards (see Appendix). These flashcards contained a set of easy-to-read words (e.g. *cat*, *foto*) that

resembled all the target phonemes in both languages (cf. Table 2) in addition to one image that was aimed at making them figure out what words they were being asked. However, not only the children were taken as subjects for this experiment. Their parents were also requested to read out such words in order to serve as comparative models of either Spanish ($L1_1$) or English ($L1_2$).

In order to measure the articulation of the previously mentioned set of phonemes, the experiment was helped by the software programme *Audacity* and hence accompanied by a CD where the recordings can be found in. This software turns out to be remarkably illustrative, for it enables the user to simultaneously reproduce more than one track; likewise, the sound strings display facilitates the researcher to check where the difference is set on. By reproducing the experiment recordings through this software, not only were the subjects' phonemic utterances compared to their models (i.e. their parents), but also determining prosodic and intonational features from their respective accents. Hence, this programme became highly useful when it came to reaching conclusions on the articulation of phonemes that may be confusing for non-native speakers. For instance, a non-native English speaker whose L1 is Spanish would pronounce, in words like *town*, a Spanish voiceless, plosive dental [t] instead of the English voiceless, plosive alveolar. The analysis is provided with a thorough description of the phonation process the participants of this experiment were undergoing, primarily based on Roach's theory in *English Phonetics and Phonology* (2007). Besides, psycholinguistic phenomena concerning bilingualism served as to compare psychological processes that affect the acquisition of two languages in a same linguistic community (e.g. phonological avoidance)

5. ANALYSIS

The analysis of the data obtained from real English-Spanish bilingual participants will be mainly phonetic- and psycho-linguistically based. Therefore, this section will be subdivided into two parts regarding a set of consonants (5.1) and vowels (5.2) in both languages.

5.1. Contrastive analysis of the English and Spanish fricatives, plosives and (post-) alveolar consonants

Among the great quantity of consonants the English languages holds, the experiment has focused on testing the hypothetical transfer between the following set of phonemes:

(a) the English lenis, plosive alveolar /d/ vs. the Spanish lenis, plosive dental /d/;

(b) the English fortis, plosive alveolar /t/ vs. the Spanish lenis, plosive dental /t/;

(c) the English lenis, approximant post-alveolar /r/ vs. the Spanish lenis alveolar roll /ř/;

(d) the lenis, labio-dental fricative /v/ vs. the lenis, bilabial plosive /b/.

The aim of choosing these apparently similar consonants is to demonstrate to what extent the Spanish phonetics could lead to transfers into the bilinguals' English code. In the case of (a) and (b), the two pair of phonemes are graphically identical, even though they differ in the place of articulation that results in being alveolar (English) and dental (Spanish). Note that this is also a frequent tendency among Spanish EFL learners, so it is likely that even coordinate bilinguals perform this transfer as well; in the case of (c), what has been tested is this typical roll of the Spanish /ř/, as in words like *perro* and *rojo.* This phoneme tends to be highly challenging for the great majority of SFL[6] English-speaking learners[7]; lastly, (d) presents two consonants that, as in the case of (a)'s velars, are typically mispronounced by Spanish EFL students — considering the Spanish phonology lacks of this lenis, labiodental fricative found European languages like French or German.

To start with, the first set of phonemes to be contrasted will be the lenis, plosive alveolar /d/ and the lenis, plosive dental /d/. In order to carry out this testing, the given words were *doctor* and *hada*. As can be observed, both words resemble the same grapheme for a different place-of-articulation phoneme (i.e. alveolar ridge in English; upper teeth in Spanish). In general terms, the majority of the subjects performed both sounds in their two languages accurately. Thus, it can be proved that this phoneme has correctly been cracked and distinguished from others in their dual phonological system. Yet, just two of the subjects (S3 and S4) showed a clear transfer from the Spanish dental positioning that could have been due to their maturity and further contact with Spanish speakers (listen to Track 1).

Together with /d/, subjects were asked to read aloud the Spanish word *foto* and the English *toy*. Both utterances expected a similar transfer as in the previous example due to the Spanish dentalisation of the English fortis, plosive alveolar /t/. In the case of *foto,* the target phoneme is in the second syllable. The articulation of such a consonant would require an aspiration afterwards, since it is followed by a rounded back mid-close

[6] SFL: Spanish as a Foreign Language.

[7] Note that some varieties of English like the Scottish English present a similar thrill when pronouncing the alveolar [r].

/o/. Apart from the place of articulation, the part of the tongue taking place becomes a matter of distinction as well; that is, whilst the English alveolar requires the pressure of the blade onto the alveolar ridge (Roach, 2007: 34-35), the Spanish dental stop just needs the tip of the tongue to articulate such a sound. The outcomes of this pair of words resulted in a successful acquisition of the English alveolar position of /t/ in the total amount of the participants; however, in the Spanish word *foto,* just S5 presented an alveolarisation of the Spanish dental /t/ (listen to Track 2), a fact that twists the acquisition of this phoneme in this subject's Spanish code. In other words, the initial hypothesis that the Spanish environment may have influenced the phonological competence of the subjects in English is found as being totally the opposite. One of the most likely reasons for this phenomenon in this five-year-old participant is that he cannot deal at all with both languages at graphic level; that is, even though the flashcard that contained the word *foto* (cf. Appendix) was illustrated with a picture, his early bilingualism does not enable him to distinguish between the Spanish /ˈfoto/ and the English /ˈfəʊtəʊ/. If comparing, the difference is considerably subtle, for just the diphthongisation of the Spanish /o/ ends up being such noticeable. Moreover, his being with his father while recording can be regarded as a matter of linguistic identification, whereby the child was rather prone to switching to English.

The third set of contrastive phonemes became even more challenging for the vast majority of the participants, since one of them (S5) faced difficulties in articulating the so-called Spanish roll [ř]. The words given for testing this contrast were *rose* (English) and *rosa* (Spanish), which resemble the same semantic meaning and practically the same written form. In fact, scholars like Gómez (1993) argued in his theory on Spanish phonemic acquisition that Spanish-speaking children are prone to rather distinguishing between /ř/ and /r/ before aged three. At that stage, the roll /ř/ is taken as a fricative instead of as liquid (i.e. /l/ or /r/, which are harder to differentiate at an early stage) (Gómez, 1993:14-15). Regardless of age span, S4 and S5 showed a clear difference in articulating the roll /ř/ (listen to Track 3), which may have been given for: a) a slowdown of his acquisition of this phoneme; b) the child may present some sort of rhoticism disorder that prevents him from rolling, or c) the 5-year-old participant experiences segmental transfer (Fabiano-Smith et al., 2010); that is, unlike his sister (i.e. S4), he suffers from a tendency in approaching the sonorisation of the lenis, approximant post-alveolar /r/ to that of a roll.

The final contrast of this sub-section was between the lenis, labio-dental fricative /v/ and the lenis, bilabial plosive /b/ through the synonyms *victory* (English) and *victoria* (Spanish). The aim of choosing these semantically identical words was to test whether /v/ is articulated by releasing the air in a steadily way at the same time the tip of the tongue is placed onto the upper teeth. Given that in Spanish this phoneme is by no means present and is, instead, articulated as a lenis, bilabial plosive /b/, the bilingual participants would be expected to pronounce a sound that is solely heard from their respective English-speaking models.

When the selection of specific phonemes for both languages took place, one of the most essential in the English corpus was the lenis, labio-dental fricative /v/. Two factors must be noticed for the choice of /v/: first, the high frequency it presents in European languages as French, German or Italian in contrast to its lack in Spanish; and second, that this last-mentioned phonemic absence in Spanish may lead to the articulation of /b/ instead — as normally happens with Spanish EFL learners. This difference in sound can be found in words like /bɔɪs/ and /vɔɪs/ (*boys* and *voice*) that constitute minimal pairs[8]. Since children were, at least, introduced to reading in Spanish, they were expected to pronounce two graphically similar words (i.e. *victoria* and *victory*) whose respective phonemes in the two target languages may lead to a new case of language transfer in this research.

As can be observed in the description of /v/ and /b/, these two phonemes differ in every single phonemic feature. Thus, the articulation of them both should not bring about errors if: first, a proper code-cracking (cf. Lust, 2006: 143) has taken place in due time (i.e. before aged 3); and second, it has not been mistaken for the probably more frequent word in their Spanish-speaking environment *victoria.* Nevertheless, two participants (S2 and S3) presented the expected transfer from their Spanish phonological system; that is, /v/ is not included in their English code, as it turns out to be substituted by a plosive /b/ instead.

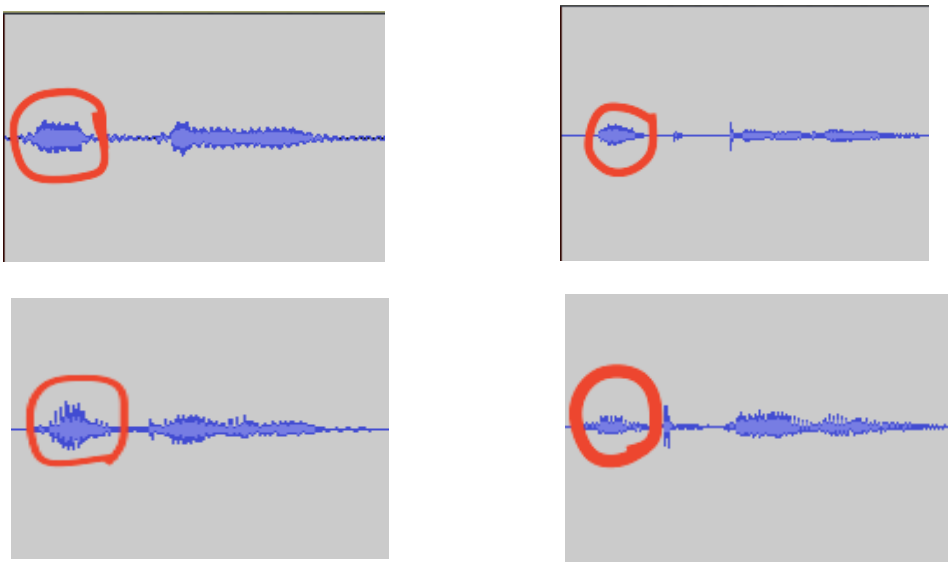
In psycholinguistic terms, scholars like Lleó (2016) assert that right at the early stages of linguistic acquisition, some bilingual children undergo a process known as (phonemic) avoidance. By this process, bilingual children unconsciously select, in this

[8] According to Crystal, minimal pairs are "One of the discovery procedures used in phonology to determine which sounds belong to the same class, or phoneme. Two words which differ in meaning when only one sound is changed are referred to as a 'minimal pair'" (2007: 307). In this case, these two utterance just differ in one segment: /b/ and /v/ respectively.

case on phonology, sounds that may be easier to pronounce than others (Lleó, 2016: 8). Hence, tracing back to the last-mentioned reasons for phonemic error in these two consonants (i.e. /v/ and /b/), either the missing code-cracking of /v/ or the influence of the Spanish lack of this phoneme could have caused its mispronunciation; furthermore, this avoidance, which, according to Lleó, is triggered by an unconscious self-selection of the speaker, will furtherly trigger fossilisation of this phonological error. In other words, since the speakers opt for articulating a plosive (which requires less effort due to the sudden release of air) instead of the fricative (i.e. much longer expulsion of air), their not-identification of /v/ will lead to a permanent pronunciation of /b/ in words such as *victory*. Figure 1 illustrates the voice-recording of the utterances *victory* (left) and *victoria* (right) by S2, who shows this phonemic transfer from Spanish in the articulation of /b/ instead of /v/. Right below, it is displayed the same utterances from his English (left) and Spanish (right) models:

Figure 1. Phonological avoidance of /v/ in S2 (screenshots taken from Audacity)

/ˈvɪktəri/ /bik 'to rja/



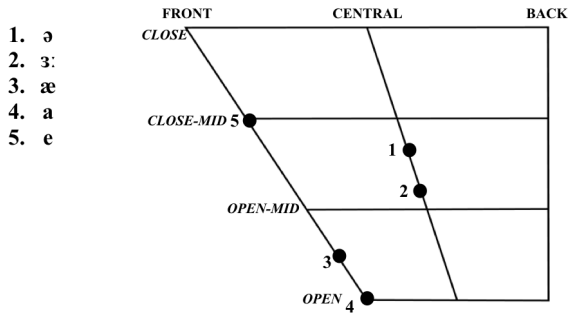
By taking the English-speaking model of S2, two key features can be pointed out concerning voice-recording: first, because it is fricative, there is a continuous release of air that reaches a common peak in both the English and the Spanish word due to the upcoming articulation of the spread, close front /ɪ/. Nevertheless, this air-release appears to be notably brief in the rest of the images like the Spanish-speaking model on the right corner below. In comparison, the participant above displays the same phonetic articulation in both *victory* and *victoria*.

5.2. Vowel acquisition and competence: contrastive analysis of /ə/, /ɛː/ and /a/

Research on phonological acquisition and universal grammars (Jakobson, 1968; Chomsky et al., 1968, S. Dale, 1984; Kenstowicz, 2001; Harley, 2001) have differed in the assorted stages this process is based on. For instance, according to Dale, each child is surrounded by alike stimuli that function as triggers for their linguistic development (1980: 269). It is assumed that the case of bilinguals is not an exception and that it may even result more complex due to sociolinguistic factors (in terms of relation of each language with specific contexts). Yet, all the theories coincide in one aspect: the first contrast a child comes across with is that between consonant and vowel (CV). This section is devoted to illustrating whether the Spanish vowel system formed out of five vowels (/i/, /e/, /a/, /o/, /u/) does not provoke avoidance as in the previous cases in 5.1.

For the sake of this paper's experiment, three frequent vowels of the English language have been considered: the spread, front open short /æ/, the neutral, open-mid central long /ɜː/ and, finally, the neutral, open-mid central short /ə/ (this last one is commonly known as "schwa"). As in the previous cases, three different words were given to the bilingual participants in flashcard form. As can be observed, all these vowels resemble one same feature in terms of verticality (i.e. if they are open, mid-open, mid-close or close): all of them are open at some degree, so the acquisition of each may lead to an imperception of the target English vowels and an approach to the most similar vowels in Spanish /a/ and /e/. Figure 2 shows the target phonemes displayed onto the so-called vowel trapezoid:

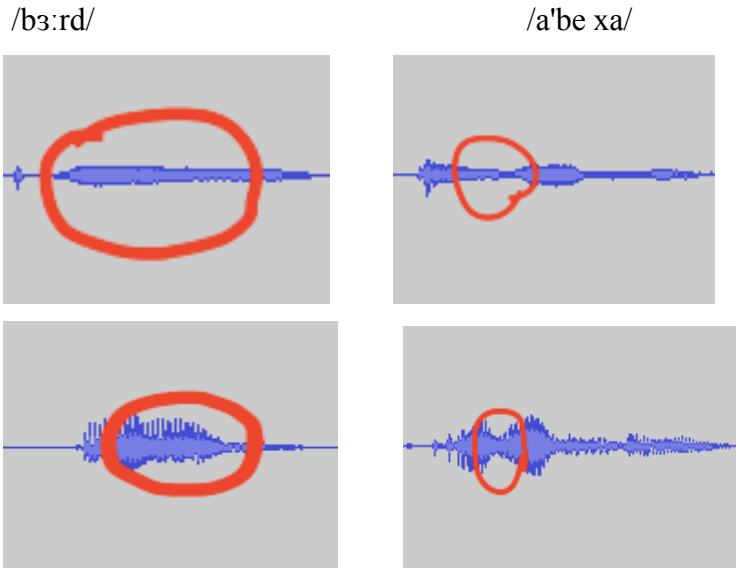
Figure 2. Target English (1-3) and Spanish vowels (4, and 5) and its openness in the vocalic trapezoid (illustration by the present author)



To begin with, the uttered word for the testing of /ɜː/ was *bird* /bɜːrd/, whose long vowel sound was contrasted to the brief duration of /e/ in *abeja* /a'bexa/. Despite the case of consonants, the analysis of this very vowel resulted almost successful with a native-

like articulation in terms of length and position, that clearly differed from the short /e/ in the Spanish word. To illustrate this, Figure 3 shows how, in this case, S1 maintains this last-mentioned lengthening of /ɜː/ during the whole utterance (up-left) in comparison to the short /e/ on the right. As in the previous example, it has been illustrated with the participant's parents' utterance down below:

Figure 3. Articulation of /ɜː/ and /e/ in S1 (listen to Track 4)



Despite the pitch of each participant, it can be observed in the inside of the red circles the range of both /ɜː/ on the left and /e/ on the right. In the case of the English utterance, it coincides that, because of the rhotic variety[9] of the Irish father, the length of the vowel is accompanied by the preceding /r/ sound that gets concluded by the articulation of the fortis, alveolar plosive /d/.

The second vowel to be analysed is /æ/, whose articulation may be mistaken with the spread, open front /a/ of the Spanish language. The target word to test the acquisition in bilinguals was *cat* /kæt/, which, typically, would be pronounced as *[kat] by a Spanish EFL learner. Since the difference in pronunciation of these two vowels is remarkably subtle (see proximity in Figure 2), the erroneous pronunciation of this particular phoneme and its consequent substitution would mostly be likely to take place. Nevertheless, it was just the case of S3 who seemed to have undergone a new case of phonemic avoidance

[9] In English varieties such as North American or Irish English, rhoticism consists on the articulation of /r/ in post-vocalic position; conversely, British varieties like the Receive Pronunciation (RP) is considered non-rhotic for none pre-vocalic /r/ is pronounced (Crystal, 2008).

(listen to Track 5). The reasons for this error could directly be linked to /v/'s avoidance in that the lack of this vowel in the Spanish vowel corpus may have triggered the disappearance of /æ/ in S3's English. Three reasons were contemplated: a) the subject's social environment with Spanish speakers; b) because of her reading maturity, her cognitive relation of the grapheme <a> in Spanish with the phoneme /a/ (cf. Flege, 1991: 711); or c) due to /æ/'s slight perception, the participant may have be subjected to this last-mentioned phonological avoidance from a very early age.

The analysis of these two voice-recordings draws conclusions on the openness of each vowel. If observing again Figure 2 on the vocalic trapezoid, there is not such a remarkable distance between the two. However, it must be noted that the position of the tongue is slightly higher when articulating /æ/, which drives the vowel to the mid-open sector (i.e. that closer to /ɛ/). Consequently, the lack of code-cracking of the participant could be concluded to be another case of phonemic avoidance and transfer from Spanish; in other words, since /a/ is not found in the English phonology (unlike /b/ and /v/ in the previous case), the subject may have included it because of its frequent use in her everyday language.

To conclude this analysis of the English vowels in the bilingual's phonology, the participants were tested to utter the neutral, central, open-mid short /ə/ — most commonly known among phoneticians (Roach, 2007; Crystal, 2008) as *schwa.* This specific phoneme of the English language is typically contained in weak syllables, as in "–ter", in the word "painter" /ˈpeɪntə/. This laxness provokes that the English speaker articulates schwa in a neutral way — the lips are neither spread (e.g. when smiling), nor rounded (e.g. when uttering a back close vowel as /u/). For the sake of the phonological appraisal, the subjects were expected to articulate a, as mentioned in the theory, weak or lax central sound that was displayed in the flashcard word "television" /ˈtɛlɪˌvɪʒən/.

Schwa is stated to be one of the most frequent sounds of the English phonology, not only in monophthongs as seen in "painter," but also in diphthongs (e.g. "tomorrow" /təˈmɒrəʊ/) and triphthongs (e.g. "higher" /ˈhaɪə/). Hence, this remarkably usual presence of the schwa sound in their English phonemic repertoire was expected to be successfully acquired in their $L1_2$ (i.e. English). Providing Jackobson's theory on phonological development (1968), vowels are typically acquired after consonants in a CV form, and these firstly acquired vowels are universal. It would imply that bilinguals who are acquiring two languages at the same time (in the case of the participants of this research) would include schwa after having their common generative phonology (cf. Chomsky et

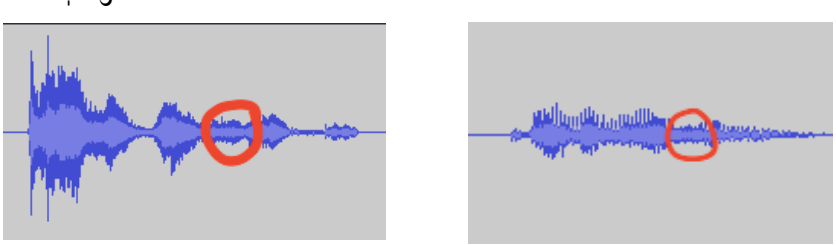
al., 1968) completely settled. In this way, the appearance of schwa may even get delayed before aged three.

To illustrate the performance of schwa in English-Spanish bilingual participants, Figure 4 exemplifies the articulation of this lax phoneme. Given that the utterance was made up of four syllables with the following pattern: ˈte (CV) lɪ (CV) vɪ (CV) ʒən (CVC), the transition from one to another is clearly marked by a rise of sound and the gathering of multiple strings. The schwa syllable (i.e. the last one) is marked, as it is meant to be, by a decrease after articulating the lenis, post-alveolar fricative /ʒ/ towards the lenis, alveolar nasal /n/. That last-mentioned transition provokes in this utterance a weak sound that is commonly uttered with the English schwa /ə/. In contrast, the Spanish language lacks of this type of sound, which makes Spanish EFL learners introduce similar vowels of the Spanish phonology such as /o/ (e.g. "doctor" would be pronounced as */ˈdoktor/, having simply changed the stress from the second syllable to the first position). Therefore, the inclusion of this phoneme became crucial to draw conclusions whether the Spanish reduced vowel system (if compared to English) has caused new cases of phonemic avoidance or code-cracking.

To sum up on this last phoneme testing, the highly presence of schwa in participant's English input has triggered its successful acquisition; on the other hand, the proximity of /æ/ to the Spanish /a/ has leaded to phonological avoidance in just one participant (i.e. S3), whereas the rest of the bilingual subjects seem to have correctly cracked the code and differentiated between one another. With regard to the production of long vowels such as /ɜː/, apparently every participant articulates it in an accurate way. This is primarily due to the marked length of such vowel, in this case, in the monosyllabic utterance "bird."

Figure 4. Articulation of /ə/ by S1 (left) and her corresponding English-speaking model (right) (listen to Track 6).

/ˈtɛlɪˌvɪʒən/



6. CONCLUSIONS

The presented dissertation has contemplated the likeliness of cross-linguistic interferences in phonological terms on English-Spanish bilinguals to check their accuracy in performing, with especial regard, English phonemes. After the experiment was carried out, the paper intended to answer two main questions: (1) do bilingual individuals share a balanced production of both Spanish and English phonemes? And (2) given the Spanish-speaking environment, to what extent (if any) does Spanish become dominant in the articulation of English phonemes? These questions were held under the hypothesis that the dominant Spanish-speaking environment could lead to phonemic transfers into the bilinguals' English.

As to question (1), after having checked a total amount of seven English phonemes (cf. Table 2) in contrast with five Spanish phonemes, it could be concluded that in general terms every participant seemed to have totally cracked the phonemic code – meant to enable them to articulate such phonemes afterwards; on the other hand, other participants presented specific problems in performing certain phonemes to which they may have not been that much exposed.

Concerning question (2), their dealing simultaneously with two different languages — being Spanish the dominant one — has brought about consequences when articulating particular phonemes like /ə/, /æ/ or /v/; that is, participants displayed erroneous articulations that could perfectly be made by a Spanish EFL student. The causes for theses avoidances were narrowed down to: firstly, their learning EFL at school; and secondly, their solely speaking English with their English-speaking model at home. Thus, subjects performed a sticking closeness to the Spanish phonemes (cf. section 5).

To conclude, bilingualism is definitely a broad phenomenon that is studied, among other reasons, due to its complexity and the unquestionable multilinguistic society nowadays. Concerning this paper's aims, it could be argued that the most notable phonemes of the English phonology are accurately acquired, though certain phonemes become affected by the dominant language (i.e. the mostly used by the speaker) and subsequently fossilised. Nevertheless, since the present dissertation addressed the bilingual issue from a specific perspective, further experiments with a wider range of participants and phonemes are intended to be carried out as part of future research.

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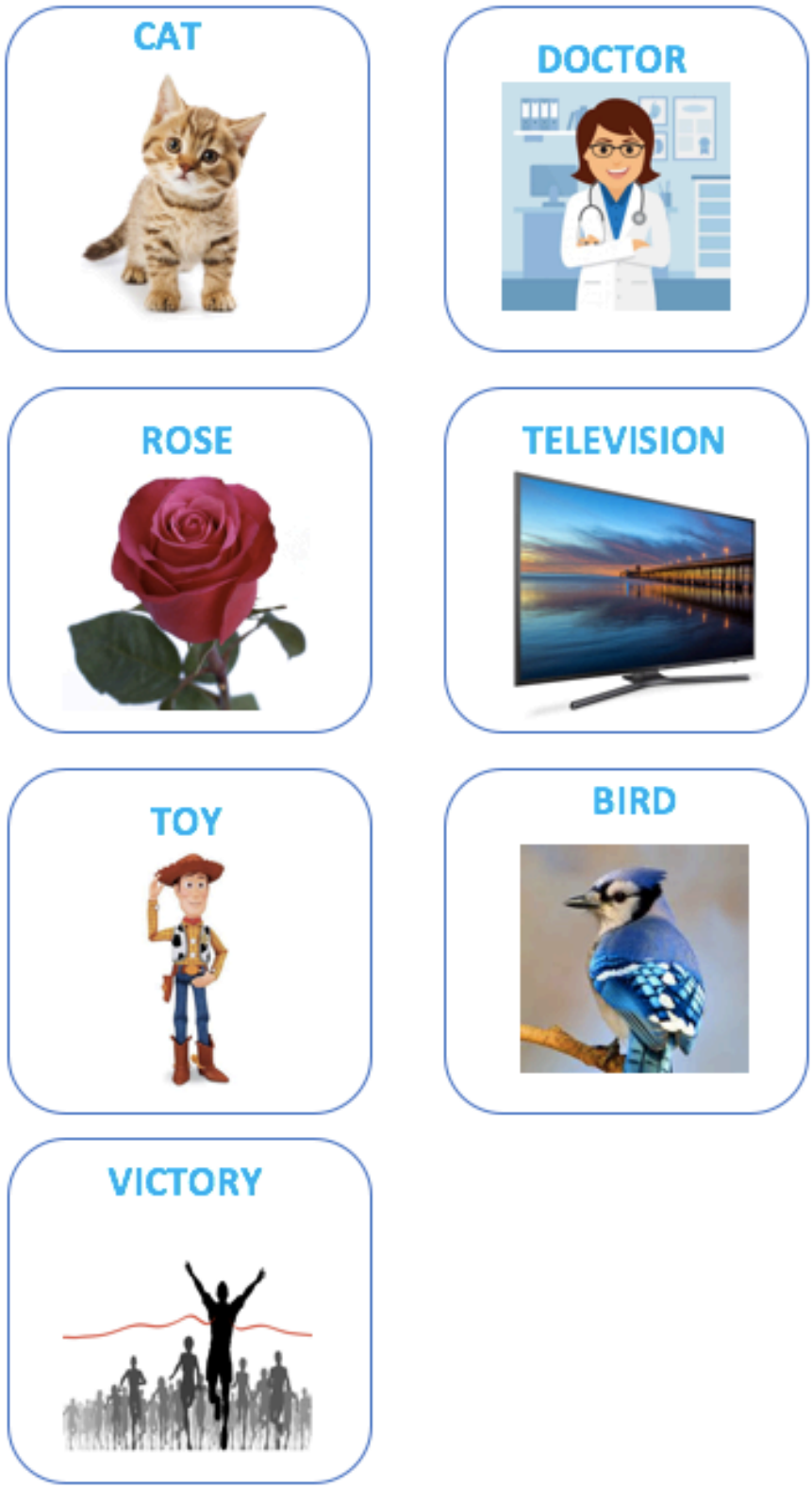
APPENDIX

Appendix 1.1. **Flashcards used to check the target English phonemes (see Table 2)**



Appendix 1.2. **Flashcards used to check the target Spanish phonemes (see Table 2)**